



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,761	03/08/2006	Gerrit Cornelis Dubbeldam	126548	3376
25944	7590	06/04/2010	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			MOWLA, GOLAM	
ART UNIT	PAPER NUMBER			
			1795	
NOTIFICATION DATE	DELIVERY MODE			
06/04/2010	ELECTRONIC			

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com  
jarmstrong@oliff.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/563,761	<b>Applicant(s)</b> DUBBELDAM, GERRIT CORNELIS
	<b>Examiner</b> GOLAM MOWLA	<b>Art Unit</b> 1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 26 February 2010.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-14 is/are pending in the application.  
 4a) Of the above claim(s) 5,7,8,10 and 14 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-4,6,9 and 11-13 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/06)  
     Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
     Paper No(s)/Mail Date \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

**FINAL ACTION**

***Response to Amendment***

1. Applicant's amendment of 02/26/2010 does not place the Application in condition for allowance.
2. Claims 1-14 are currently pending. Applicant has amended claim 1. Claims 5, 7-8, 10 and 14 are withdrawn from consideration as being part of non-elected invention.

***Status of the Objections or Rejections***

3. The objection to claim 1 is withdrawn in view of Applicant's amendment.
4. Due to Applicant's amendment of claim 1, all rejections from the office Action dated 10/26/2010 are withdrawn. However, upon further consideration, a new ground of rejection is presented below.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
6. Claims 1-4, 6, 9 and 11-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the TCO layer" in line 6 and "the TCO" in line 18. There is insufficient antecedent basis for these limitations in the claim. It is suggested to use either "the TCO layer" or "the TCO".

Claim 1 recites the limitation "etch resist" in line 18. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation a solar cell foil" in line 18. There is insufficient antecedent basis for this limitation in the claim.

Claim 2 recites the limitation "the non-TCO side of the substrate" in line 12. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Andel et al. (WO 98/13882).

Regarding claims 1 and 6, Van Andel discloses a roll-to-roll process (page 1, lines 15-21; page 3, lines 4-9) for manufacturing a solar cell foil (figs. 1-13) (claims 1 and 11) (page 9, lines 10-11; page 11, line 18 - page 17, line 2) comprising the steps of:

- providing an etchable temporary substrate (1) (fig. 1) (page 17, lines 26-27);
- applying a transparent conductor (2) made of F-doped SnO<sub>2</sub> as the front electrode onto the temporary substrate (1) (fig. 2) (page 18, lines 1-5);
- applying a photovoltaic layer (PV layer 6) onto the transparent conductor (2) (fig. 5, page 18, lines 11-15);
- applying an aluminum layer (10) as the back electrode layer;
- applying a permanent carrier (14) (figs. 11-12) (page 19, lines 1-4);

- ensuring the front electrode (2) and the back electrode (10) are electrically connected in an interconnect (9) (fig. 10) to establish a series connection (figs. 8-10) (page 17, lines 7-15; page 18, lines 23-27),
  - the front (2) and the back (10) electrodes each being interrupted by a front (grooves 5 as shown in fig. 4) and back (grooves 12 as shown in fig. 10) grooves, respectively, at different sides of the interconnect (see figs. 4 and 10 for configuration);
- wherein in any of the preceding steps, an etch resist is provided on a second side (bottom side) of the temporary substrate (1) opposite to a first side (top side) of the temporary substrate (1) at least at the location of the interconnect (9) (fig. 10), and at least not at the entire location of the front groove (5) (page 5, lines 12-21; page 16, line 27 to page 17, line 2); and
- followed by selectively removing the temporary substrate (1) where it is not covered with the etch resist (figs. 11-13) (page 5, lines 12-21; page 16, line 27 to page 17, line 2; page 19, lines 1-7) to obtain the solar cell foil provided with a protective cap (contact for connection to any auxiliary apparatus or net) (portion of the substrate which is not etched) (page 5, lines 12-21; page 16, line 27 to page 17, line 2) on the TCO (2) at the location of the interconnect (9).

In the limitation "at the location of the interconnect", the word "at" is given the broadest reasonable interpretation and is interpreted as "on", "next to", "by the side of" or "by". Since, the protective cap (contact for connection to any auxiliary apparatus or

Art Unit: 1795

net) (portion of the substrate which is not etched) (page 5, lines 12-21; page 16, line 27 to page 17, line 2) is formed on the back side of the TCO (2) by selectively etching the substrate (1), the protective cap must inherently be formed "on", "next to", "by the side of" or "by" the location of the interconnect (9).

Van Andel discloses that the temporary substrate (1) is made of metal (page 9, lines 10-11; page 17, lines 26-27), and a part of the substrate is not etched out so that it can form a contact (instant claimed protective cap) on the TCO (2) (page 5, lines 12-21; page 16, line 27 to page 17, line 2). Therefore, Van Andel implicitly teaches that the etch resist is not provided at the entire location of the front groove, because the temporary substrate (1) is made of metal (page 9, lines 10-11; page 17, lines 26-27) and leaving a rest of such substrate covering the entire front groove would electrically connect two adjacent stripes (4), which in results short-circuits the series connected solar cell foil, and thus, the solar cell foil of Van Andel would not function properly.

***Claim Rejections - 35 USC § 103***

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
10. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Andel as applied to claim 1 above.

Regarding claim 2, Applicant is directed above for complete discussion of claim 1, which is incorporated herein. Van Andel further discloses that the step of applying the etch resist on the non-TCO side of the temporary substrate (1) is performed before the step of selectively removing the temporary substrate (1) where it is not covered with

etch resist (page 16, line 27 to page 17, line 2). Although the reference is silent as to whether the step of applying the etch resist on the non-TCO side of the temporary substrate is performed directly before the step of selectively removing the temporary substrate, selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results (MPEP §2144.04 IV(C); *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)).

Regarding claim 11, Van Andel further discloses that the process is carried out in a roll-to-roll process (page 1, lines 15-21; page 3, lines 4-9).

11. Claims 1-2, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Andel et al. (WO 98/13882).

Regarding claim 1, Van Andel discloses a process for manufacturing a solar cell foil (figs. 1-13) (claims 1 and 11) (page 9, lines 10-11; page 11, line 18 - page 17, line 2) comprising the steps of:

- providing an etchable temporary substrate (1) (fig. 1) (page 17, lines 26-27);
- applying a transparent conductor (2) made of F-doped SnO<sub>2</sub> as the front electrode onto the temporary substrate (1) (fig. 2) (page 18, lines 1-5);
- applying a photovoltaic layer (PV layer 6) onto the transparent conductor (2) (fig. 5, page 18, lines 11-15);
- applying an aluminum layer (10) as the back electrode layer;
- applying a permanent carrier (14) (figs. 11-12) (page 19, lines 1-4);

- ensuring the front electrode (2) and the back electrode (10) are electrically connected in an interconnect (9) (fig. 10) to establish a series connection (figs. 8-10) (page 17, lines 7-15; page 18, lines 23-27),
  - the front (2) and the back (10) electrodes each being interrupted by a front (grooves 5 as shown in fig. 4) and back (grooves 12 as shown in fig. 10) grooves, respectively, at different sides of the interconnect (see figs. 4 and 10 for configuration);
- wherein in any of the preceding steps, an etch resist is provided on a second side (bottom side) of the temporary substrate (1) opposite to a first side (top side) of the temporary substrate (1) at least at the location of the interconnect (9) (fig. 10), and at least not at the entire location of the front groove (5) (page 5, lines 12-21; page 16, line 27 to page 17, line 2); and
- followed by selectively removing the temporary substrate (1) where it is not covered with the etch resist (figs. 11-13) (page 5, lines 12-21; page 16, line 27 to page 17, line 2; page 19, lines 1-7) to obtain the solar cell foil provided with a protective cap (contact for connection to any auxiliary apparatus or net) (page 5, lines 12-21; page 16, line 27 to page 17, line 2) on the TCO (2) at the location of the interconnect (9).

In the limitation "at the location of the interconnect", the word "at" is given the broadest reasonable interpretation and is interpreted as "on", "next to", "by the side of" or "by". Since, the protective cap (contact for connection to any auxiliary apparatus or net) (portion of the substrate which is not etched) (page 5, lines 12-21; page 16, line 27

to page 17, line 2) is formed on the back side of the TCO (2) by selectively etching the substrate (1), the protective cap must inherently be formed "on", "next to", "by the side of" or "by" the location of the interconnect (9). In an alternative, in absence of unexpected results the particular placement of the contact in a solar cell foil is held to be an obvious matter of design choice (*In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)).

Van Andel discloses that the temporary substrate (1) is made of metal (page 9, lines 10-11; page 17, lines 26-27), and a part of the substrate is not etched out so that it can form a contact (instant claimed protective cap) on the TCO (2) (page 5, lines 12-21; page 16, line 27 to page 17, line 2). Hence, Van Andel implicitly teaches that the etch resist is not provided at the entire location of the front groove, because the temporary substrate (1) is made of metal (page 9, lines 10-11; page 17, lines 26-27) and leaving a rest of such substrate covering the entire front groove would electrically connect two adjacent stripes (4), which in results short-circuits the series connected solar cell foil, and thus, the solar cell foil of Van Andel would not function properly. In an alternative, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the etch resist of Van Andel not provided at the entire location of the front groove such that the short-circuit between two adjacent stripes (4) of transparent conductive oxide could be prevented.

Regarding claim 2, Applicant is directed above for complete discussion of claim 1, which is incorporated herein. Van Andel further discloses that the step of applying the etch resist on the non-TCO side of the temporary substrate (1) is performed before the

step of selectively removing the temporary substrate (1) where it is not covered with etch resist (page 16, line 27 to page 17, line 2). Although the reference is silent as to whether the step of applying the etch resist on the non-TCO side of the temporary substrate is performed directly before the step of selectively removing the temporary substrate, selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results (MPEP §2144.04 IV(C); *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)).

Regarding claims 6 and 11, Van Andel further discloses that the process is carried out in a roll-to-roll process (page 1, lines 15-21; page 3, lines 4-9).

12. Claims 3-4, 9 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Andel as applied to claim 1 and/or 2 above, and further in view of Morikawa et al. (US 56637510).

Regarding claims 3 and 9, Applicant is directed above for complete discussion of claim 1 and/or 2, which is incorporated herein. However, the reference is silent as to whether the etch resist is a permanent etch resist.

Morikawa teaches a method of selective etching of a temporary substrate of a solar cell wherein a permanent etch resist is utilized to etch away the portion of the substrate which is not covered by the etch resist (see fig.1 and 4:20-35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the permanent etch resist of Morikawa in the method of Van Andel in order to selectively etch away the portion of the substrate not

Art Unit: 1795

covered by the etch resist, as shown by Morikawa, and also desired by Van Andel (page 16, line 27 to page 17, line 2).

Regarding claim 4, Van Andel in view of Morikawa further discloses that the color of the etch resist is selected such that it matches or contrasts with the color of the energy-generating part of the solar cell unit.

Regarding claims 12-13, Van Andel in view of Morikawa further discloses that the process is carried out in a roll-to-roll process (page 1, lines 15-21; page 3, lines 4-9).

13. Claims 1-2, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Andel et al. (WO 98/13882) in view of Jordan et al. (US 4,243,432).

Regarding claim 1, Van Andel discloses a process for manufacturing a solar cell foil (figs. 1-13) (claims 1 and 11) (page 9, lines 10-11; page 11, line 18 - page 17, line 2) comprising the steps of:

- providing an etchable temporary substrate (1) (fig. 1) (page 17, lines 26-27);
- applying a transparent conductor (2) made of F-doped SnO<sub>2</sub> as the front electrode onto the temporary substrate (1) (fig. 2) (page 18, lines 1-5);
- applying a photovoltaic layer (PV layer 6) onto the transparent conductor (2) (fig. 5, page 18, lines 11-15);
- applying an aluminum layer (10) as the back electrode layer;
- applying a permanent carrier (14) (figs. 11-12) (page 19, lines 1-4);

- ensuring the front electrode (2) and the back electrode (10) are electrically connected in an interconnect (9) (fig. 10) to establish a series connection (figs. 8-10) (page 17, lines 7-15; page 18, lines 23-27),
  - the front (2) and the back (10) electrodes each being interrupted by a front (grooves 5 as shown in fig. 4) and back (grooves 12 as shown in fig. 10) grooves, respectively, at different sides of the interconnect (see figs. 4 and 10 for configuration);
- wherein in any of the preceding steps, an etch resist is provided on a second side (bottom side) of the temporary substrate (1) opposite to a first side (top side) of the temporary substrate (1) at least at the location of the interconnect (9) (fig. 10), and at least not at the entire location of the front groove (5) (page 5, lines 12-21; page 16, line 27 to page 17, line 2); and
- followed by selectively removing the temporary substrate (1) where it is not covered with the etch resist (figs. 11-13) (page 5, lines 12-21; page 16, line 27 to page 17, line 2; page 19, lines 1-7) to obtain the solar cell foil provided with a protective cap (contact for connection to any auxiliary apparatus or net) (page 5, lines 12-21; page 16, line 27 to page 17, line 2) on the TCO (2) at the location of the interconnect (9).

In the limitation "at the location of the interconnect", the word "at" is given the broadest reasonable interpretation and is interpreted as "on", "next to", "by the side of" or "by". Since, the protective cap (contact for connection to any auxiliary apparatus or net) (portion of the substrate which is not etched) (page 5, lines 12-21; page 16, line 27

Art Unit: 1795

to page 17, line 2) is formed on the back side of the TCO (2) by selectively etching the substrate (1), the protective cap must inherently be formed "on", "next to", "by the side of" or "by" the location of the interconnect (9). In an alternative, in absence of unexpected results the particular placement of the contact in a solar cell foil is held to be an obvious matter of design choice (*In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)).

Van Andel discloses that the temporary substrate (1) is made of metal (page 9, lines 10-11; page 17, lines 26-27), and a part of the substrate is not etched out so that it can form a contact (instant claimed protective cap) on the TCO (2) (page 5, lines 12-21; page 16, line 27 to page 17, line 2). Hence, Van Andel implicitly teaches that the etch resist is not provided at the entire location of the front groove, because the temporary substrate (1) is made of metal (page 9, lines 10-11; page 17, lines 26-27) and leaving a rest of such substrate covering the entire front groove would electrically connect two adjacent stripes (4), which in results short-circuits the series connected solar cell foil, and thus, the solar cell foil of Van Andel would not function properly.

In an alternative, Jordan teaches a method of making a series connected solar cell foil wherein two adjacent TCO strips (12), which is made of SnO<sub>2</sub>, are electrically isolated from one another (fig. 2) (6:1-21) in order to avoid short-circuit. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the etch resist of Van Andel not provided at the entire location of the front groove such that the part of the conductive metal substrate which on the front groove is

Art Unit: 1795

removed in order to ensure the two adjacent stripes (4) of transparent conductive oxide are not electrically connected such that short-circuit could be avoided.

Regarding claim 2, Applicant is directed above for complete discussion of claim 1, which is incorporated herein. Van Andel further discloses that the step of applying the etch resist on the non-TCO side of the temporary substrate (1) is performed before the step of selectively removing the temporary substrate (1) where it is not covered with etch resist (page 16, line 27 to page 17, line 2). Although the reference is silent as to whether the step of applying the etch resist on the non-TCO side of the temporary substrate is performed directly before the step of selectively removing the temporary substrate, selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results (MPEP §2144.04 IV(C); *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)).

Regarding claims 6 and 11, Van Andel further discloses that the process is carried out in a roll-to-roll process (page 1, lines 15-21; page 3, lines 4-9).

14. Claims 3-4, 9 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Andel in view of Jordan as applied to claim 1 and/or 2 above, and further in view of Morikawa et al. (US 56637510).

Regarding claims 3 and 9, Applicant is directed above for complete discussion of claim 1 and/or 2, which is incorporated herein. However, the reference is silent as to whether the etch resist is a permanent etch resist.

Morikawa teaches a method of selective etching of a temporary substrate of a solar cell wherein a permanent etch resist is utilized to etch away the portion of the substrate which is not covered by the etch resist (see fig.1 and 4:20-35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the permanent etch resist of Morikawa in the method of Van Andel in view of Jordan in order to selectively etch away the portion of the substrate not covered by the etch resist, as shown by Morikawa, and also desired by Van Andel (page 16, line27 to page 17, line 2).

Regarding claim 4, Van Andel in view of Jordan and Morikawa further discloses that the color of the etch resist is selected such that it matches or contrasts with the color of the energy-generating part of the solar cell unit.

Regarding claims 12-13, Van Andel in view of Jordan and Morikawa further discloses that the process is carried out in a roll-to-roll process (page 1, lines 15-21; page 3, lines 4-9).

#### ***Response to Arguments***

15. Applicant's arguments filed on 02/26/2010 have been fully considered but are moot in view of the new ground(s) of rejection as necessitated by the amendments.

Applicant argues that Van Andel fails to disclose that the etch resist is provided at least not at the entire location of the front groove (see Remarks, page 6).

The Examiner respectfully disagrees. Van discloses that the temporary substrate (1) is made of metal (page 9, lines 10-11; page 17, lines 26-27). Hence, Van Andel implicitly teaches that the etch resist is not provided at the entire location of the front

Art Unit: 1795

groove, because the temporary substrate (1) is made of metal (page 9, lines 10-11; page 17, lines 26-27) and leaving a rest of such substrate covering the entire front groove would electrically connect two adjacent stripes (4), which in results short-circuits the series connected solar cell foil, and thus, the solar cell foil of Van Andel would not function properly.

In an alternative, Jordan teaches a method of making a series connected solar cell foil wherein two adjacent TCO strips (12), which is made of SnO<sub>2</sub>, are electrically isolated from one another (fig. 2) (6:1-21) in order to avoid short-circuit. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the etch resist of Van Andel not provided at the entire location of the front groove such that the part of the conductive metal substrate which on the front groove is removed in order to ensure the two adjacent stripes (4) of transparent conductive oxide are not electrically connected such that short-circuit could be avoided.

On page 7 of Remarks, Applicant also argues that Van Andel fails to disclose selectively removing the temporary substrate where it is not covered with etch resist to obtain a solar cell foil provided with a protective cap on the transparent conductive oxide ("TCO") at the location of the interconnect.

The Examiner respectfully disagrees. Van explicitly discloses selectively removing the temporary substrate (1) where it is not covered with the etch resist (figs. 11-13) (page 5, lines 12-21; page 16, line 27 to page 17, line 2; page 19, lines 1-7) to obtain the solar cell foil provided with a protective cap (contact for connection to any auxiliary apparatus or net) (page 5, lines 12-21; page 16, line 27 to page 17, line 2) on

the TCO (2) at the location of the interconnect (9). In the limitation “at the location of the interconnect”, the word “at” is given the broadest reasonable interpretation and is interpreted as “on”, “next to”, “by the side of” or “by”. Since, the protective cap (contact for connection to any auxiliary apparatus or net) (portion of the substrate which is not etched) (page 5, lines 12-21; page 16, line 27 to page 17, line 2) is formed on the back side of the TCO (2) by selectively etching the substrate (1), the protective cap must inherently be formed “on”, “next to”, “by the side of” or “by” the location of the interconnect (9).

***Conclusion***

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Correspondence/Contact Information***

Art Unit: 1795

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GOLAM MOWLA whose telephone number is (571) 270-5268. The examiner can normally be reached on M-Th, 0800-1830 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ALEXA NECKEL can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. M./  
Examiner, Art Unit 1795

/Alexa D. Neckel/  
Supervisory Patent Examiner, Art Unit 1795

Application/Control Number: 10/563,761

Art Unit: 1795

Page 18